

Conium maculatum
Poison Hemlock
Apiaceae

Poison hemlock, *Conium maculatum*, is an herbaceous weed of European origin found throughout many parts of the world. In southern California, poison hemlock reproduces only from seed, both as a biennial and winter annual, and occasionally as a short-lived perennial. It has smooth, purple-spotted, hollow stems, 0.5 to 3 m tall, which bear large pinnately decomposed leaves, which are largely petioled (though sessile above). The flowers are small, white, and born in large, open, compound umbels. Achenes are oval, 2 to 2.5 mm long, and prominently ribbed (Robbins et al. 1970, Munz 1974).

Poison hemlock is native to Europe, but is extensively naturalized in temperate North America, as well as other parts of the world including Australia, New Zealand, and South America (Parsons 1976, Holm et al. 1979). This species is commonly found in waste places and along roads, ditches, and cultivated fields, and it occasionally invades riparian forests and flood plains (Goeden and Ricker 1928). It is currently distributed throughout most of the continental United States (Reed 1970) and southern Canada (Montgomery 1964). In California, *C. maculatum* is listed by the California Exotic Pest Council as a "List 2" species: a wildland weed of secondary importance characterized by a localized community (WWW 1995). This weed is generally considered to be noxious, and all aerial parts are poisonous to both humans and livestock (Sperry et al. 1964, Painter and Keeler 1989). The toxicity of *C. maculatum* is due to the production of relatively high levels of conin and piperidine alkaloids, including methylconiine, coniceine, and conhydrine. In addition to the alkaloids, the foliage and flowering parts of this species contain small quantities of furanocoumarins, phototoxic compounds that are toxic or deterrent to both vertebrate and invertebrate herbivores (Berenbaum 1981, Murray et al. 1982). These plants also produce polyacetylenes (Bohlmann 1971), which have been implicated in livestock poisoning by other apiaceous plants (Panter et al. 1988).

Relative to other introduced weed species, poison hemlock is attacked by few insect herbivores (Berenbaum 1982, Goeden and Rickers 1982). In an extensive survey of poison hemlock in southern California, few insect species or individuals were found on this species. Sixteen of 20 (70%) of the phytophagous insects found on poison hemlock in this survey were rare and were only encountered as a few individuals at one or two sites (Goeden and Ricker 1982). Of the relatively few native insect species that have colonized the species throughout its range, most are species that feed generally on native and introduced plants in the Apiaceae, including *Papilio zelecaon* Lucas (Goeden and Ricker 1982), *Papilio polyxenes asterius* Stoll (Feeney et al. 1985) (Lepidoptera: Papilionidae), and *Euleia frateria* Loes (Diptera: Tephritidae) (Berenbaum 1981). In California, the most abundant insect associate with poison hemlock is the aphid, *Hyadaphis foeniculi* (Passerini), which was introduced from Europe, where it also feeds on *C. maculatum*. In recent years, another European specialist on poison hemlock, a leaf-rolling oecophorid caterpillar (*Agonopterix alstroemeriana*) has been reported feeding on flowers and foliage of poison hemlock in New York (Berenbaum and Parsons 1983), as well as in Oregon,

northern California, Utah, and mesic areas of Washington, Idaho, and Colorado (Powell and Passoa 1991). This species was also recently detected in association with *C. maculatum* in Illinois (Berenbaum and Harrison 1994), where it seems to be undergoing very rapid habitat expansion. These authors further report the use of *C. maculatum* as a host species for several other species of caterpillars, including *Eupithecia miserulata* Grote (Geometridae), *Trichoplusia ni* Hubner (Noctuidae), and *Spilosoma virginica* F. (Arctiidae). Of these species, *E. miserulata* and *T. ni* have been previously reported on poison hemlock in California (Goeden and Rickers 1982). Poison hemlock seems to be a newly recognized host for *Spilosoma virginica*, but this species is broadly polyphagous and is associated with a variety of other toxic plants as well (Tietz 1972).

References

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